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(54) **MAPPING A TRANSMISSION STREAM IN A VIRTUAL BASEBAND TO A PHYSICAL BASEBAND WITH EQUALIZATION**

(75) Inventors: **Yong He**, Beijing (CN); **Kun Tan**, Beijing (CN); **Haichen Shen**, Beijing (CN); **Jiansong Zhang**, Beijing (CN); **Yongguang Zhang**, Beijing (CN)

(73) Assignee: **MICROSOFT CORPORATION**, Redmond, WA (US)

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(57) **ABSTRACT**

Embodiments include processes, systems, and devices for reshaping virtual baseband signals for transmission on non-contiguous and variable portions of a physical baseband, such as a white space frequency band. In the transmission path, a spectrum virtualization layer maps a plurality of transmission components associated with a transmission symbol produced by a physical layer protocol to sub-carriers of the allocated physical frequency band. The spectrum virtualization layer then outputs a physical transmission symbol composed of time-domain samples derived from the mapped frequency components and a cyclic prefix. In the receive path, a time-domain symbol received on the physical baseband is reshaped and equalized by the virtual spectrum layer in order to recompose a time-domain samples of a transmission stream in the virtual baseband.